

# Recovery Plan Action Status

Plan Name: Cracking Pearly Mussel

Plan Status: Final

Plan Date: 11-Jul-91

Lead Agency: USFWS

Lead Office: Tennessee Ecological Services Field Office

(981)  
528-6481 )

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Cracking pearlymussel (Hemistena lata)	1	1	Continue to utilize existing legislation and regulations to protect species and its habitat	Ongoing Current	Prior to FY 1995		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of CONservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Other: Regulations	Internal Field Assistance	

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Cracking pearlymussel (Hemistena lata)	1	10	Develop and implement cryopreservation	Not Started			National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Work type not yet selected	Labor type not yet selected	

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Cracking pearlymussel (Hemistena lata)	2	11	Develop and implement a monitoring program	Ongoing Current	FY 2012		U.S. Fish and Wildlife Service, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Virginia Department of Game and Inland Fisheries, USFWS Regional Office 4	Research: Demographic Studies, Research: Population Assessment, Research: Population Surveys	Internal Administrative, Internal Field Assistance, Internal Technical Assistance, Species Expert	TVA intends to initiate surveys to specifically target monitoring this species in the Elk River in FY 2012. Prior TVA surveys in the Elk River focused on monitoring all native mussels; this will continue, but with a more concerted effort to locate cracking pearlymussels. TVA is currently (FY 2011) developing survey protocols. Virginia Polytechnic Institute and State University (Virginia Tech.), USGS and the FWS with assistance from others have been monitoring cracking pearlymussel populations in the Clinch River in Hancock County, TN since 2000. Data from these surveys resides with Virginia Tech. and in the FWS' TN Field Office cracking pearly mussel species files.

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Cracking pearlymussel (Hemistena lata)	3	12	Annually assess recovery program and modify program and plan where required	Ongoing Current	Prior to FY 1995		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Management: Planning	Internal Field Assistance	

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Cracking pearlymussel (Hemistena lata)	2	2	Meet with local governmental officials and business interests and elicit their support for recovery	Ongoing Current	Prior to FY 1995		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Management: Planning	Internal Field Assistance	

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Cracking pearlymussel (Hemistena lata)	1	3	Develop information and education program and present	Ongoing Current	Prior to FY 1995		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Other: Information and Education	Internal Field Assistance	Task duration: 1 year to develop, then continuous

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Cracking pearlymussel (Hemistena lata)	2	4	Consider use of land acquisition to protect the species	Ongoing Current	Prior to FY 1995		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Acquisition: Fee Title	Internal Field Assistance	TWRA has purchased and is currently managing a property located at Kyle's Ford on the Clinch River in Hancock County, TN. This site is important because it has extremely high native mussel diversity (including cracking pearlymussels) and densities. Additional land acquisition opportunities will be identified and considered as opportunities arise.

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Cracking pearlymussel (Hemistena lata)	1	5	Conduct research necessary for species management and recovery; i.e., habitat requirements, biology, and threat analysis	Ongoing Current			National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Research: General, Research: Genetics, Research: Habitat Requirements, Research: Habitat Status, Research: Propagation	Internal Field Assistance, Internal Technical Assistance, Species Expert	Virginia Tech., Virginia Department of Game & Inland Fisheries and FWS staff at Virginia Tech. have obtained brood stock from the Clinch River and cultured these individuals. This work has involved identifying host fish species, studying the species reproductive cycle through juvenile mussel transformation, and determining necessary requirements (appropriate water temperatures, etc.) for successful reproduction. Research will continue on how to successfully culture this species. To date, only low numbers of glochidia have been produced in culture facilities.



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Cracking pearlymussel (Hemistena lata)	1	6	Based on biological and threat analysis, investigate need for management and implement where needed	Ongoing Current	FY 2008		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Research: Habitat Status	Contract, Internal Administrative, Internal Field Assistance, Internal Technical Assistance	Priority 1, 2, or 3 (depending on result of 2.1, 2.2, 2.3 and 2.4).  An adaptive management/structured decision making process has been underway since 2008 which is focusing on the Tennessee Valley Authority (TVA) modifying operations at Tims Ford Dam; the intent of these changes is to improve habitat and water quality conditions for two listed species, the cracking pearlymussel and boulder darter, downstream of the dam in 133 miles of the Elk River in TN and AL. Over \$250,000 in TVA funds was recently provided to USGS to hire a post-doctorate to develop and refine various models as part of the Tims Ford Dam adaptive management/structured decision making process; this effort will occur through 2011 - 2011. In conjunction with this effort, the post-doctorate will coordinate with TVA to study the cracking pearlymussel population (distribution, habitat use, etc.) in the Elk River drainage. Information learned about the species from biological and physical surveys will assist in

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										guiding TVA in modifying operations associated with hydropower generation at Tims Ford Dam with the goal of warming spring and summer tailwater temperatures and lessening water level fluctuations year-round; these modifications should help with recovery of the cracking pearlymussel.

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Cracking pearlymussel (Hemistena lata)	3	7	Determine number of individuals required to maintain viable population	Not Started			National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of Conservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Work type not yet selected	Labor type not yet selected	

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Cracking pearlymussel (Hemistena lata)	1	8	Search for additional populations and suitable habitat	Complete	FY 1995 - FY 1999	FY 2000 - FY 2004	National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of COnservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Research: Habitat Requirements, Research: Habitat Status	Contract, Species Expert	

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Cracking pearlymussel (Hemistena lata)	1	9	Develop techniques, select sites, reintroduce the species back into historic habitat, augment populations, and protect any populations established	Ongoing Current	FY 1995 - FY 1999		National Park Service, The Nature Conservancy, Indiana Department of Natural Resources, Ohio Department of Natural Resources, Alabama Department of Conservation and Natural Resources, Illinois Natural History Survey, Illinois Department of Natural Resources, Tennessee Valley Authority , Tennessee Wildlife Resources Agency , Tennessee Department of CONservation , Illinois Department of Conservation, Kentucky Department of Fish and Wildlife Resources, Kentucky State Nature Preserves Commission, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, U.S. Fish and Wildlife enhancement, USFWS Regional Office 5, USFWS Regional Office 3, USFWS Regional Office 4	Research: Propagation, Research: Reintroduction	Contract, Internal Administrative, Internal Field Assistance, Internal Technical Assistance, Species Expert	Virginia Tech., FWS staff at Virginia Tech and the Virginia Department of Game & Inland Fisheries have been collecting brood from the Clinch River since 2002 and culturing these individuals. As techniques are refined and higher numbers of glochidia are produced, those mussels will be released back into the Clinch to supplement the existing population and potentially in other watersheds where the species occurred historically. The Tennessee Wildlife Resources Agency and Alabama Department of Conservation and Natural Resources (ADCNR) collected cracking pealymussel brood from the Elk River on August 11, 2011. Four mussels were found and taken to ACDNR's facility for culture with the intention of out-planting their offspring in the Elk River to augment the diminished population in that drainage. Two of the four mussels collected died several hours later (believed to be as a result of their feet being damaged during collection).